VOLUME CONTENTS

VOLUME 61 1997 NUMBER 1

G. Yu. STEPANOV: Nikolai Yegorovich Zhukovskii: On the 150th anniversary of his birth (5(17) January 1847–17 March 1921) 1
V. F. ZHURAVLEV: A new algorithm for Birkhoff normalization of Hamiltonian systems 9
A. I. NEISHTADT and V. V. SIDORENKO: Stability loss delay in a Ziegler system 15
A. V. BORISOV and A. V. TSYGVINTSEV: Kovalevskaya's method in rigid body dynamics 27
A. T. ZAREMBA: Stabilization of the programmed motions of a rigid body with uncertainty in the parameters of the equations of dynamics 33
A. S. ANDREYEV and S. P. BEZGLASNYI: The stabilization of controlled systems with a guaranteed estimate of the control quality 41
I. M. ANAN'YEVSKII: The control of a mechanical system with unknown parameters by a bounded force 49
V. I. VOROTNIKOV: The construction of bounded game-theoretic controls for non-linear dynamical systems 59
V. A. KUZ'MINYKH: Global regularization of the orbits of relative motion in a version of the many-body problem 71
D. F. ABZALILOV, L. A. AKSENT'YEV and N. B. IL'INSKII: The inverse boundary-value problem for an airfoil with a suction slot 75
V. I. ZUBOV: The optimum airfoils at low angles of attack in a supersonic gas flow 83
L. M. ZIGANGAREYEVA and O. M. KISELEV: Maximum critical Mach number flows around semi-infinite solids of revolution 93
S. A. VAKULENKO and I. A. MOLOTKOV: The initial stage in the evolution of displacement fronts in the non-linear filtration problem 103
V. A. GORODTSOV and V. M. YENTOV: Instability of the displacement fronts of non-Newtonian fluids in a Hele-Shaw cell 111
L. I. ZAICHIK: Modelling of the motion of particles in non-uniform turbulent flow using the equation for the probability density function 127
N. I. GVOZDOVSKAYA and A. G. KULIKOVSKII: Electromagnetic shock waves and their structure in anisotropic magnetic materials 135
V. I. GORBACHEV and B. Ye. POBEDRYA: The effective characteristics of inhomogeneous media 145
P. Ya. KOCHINA: The Zhukovskii function and some problems in filtration theory 153
S. V. MELESHKO: Steady spatial non-isentropic double-wave type gas flows 157
A. I. RYLOV: The monotonicity properties of some axisymmetric subsonic flows 165
S. D. ALGAZIN and I. A. KIIKO: A numerical-analytic investigation of the flutter of a plate of arbitrary shape in the plane 169
Contents of next issue I

VOLUME 61 1997 NUMBER 2

Ivan Grigor'yevich Bubnov: on the 125th anniversary of his birth (6(18) January 1872–13 March 1919) 173
LI ZHI and N. R. SIBGATULLIN: An improved theory of long waves on the water surface 177
A. T. IL'ICHEV and A. V. MARCHENKO: The formation of non-linear waveguides in the resonant interaction of three surface waves 183
I. V. ANDRONOV and B. P. BELINSKII: Scattering of hydroacoustic waves by a narrow crack in an elastic plate 195
I. O. OSIPOV: Reflection and refraction of plane longitudinal waves at the interface of a liquid and an anomalous anisotropic medium 203
A. V. BADANIN: Diffraction of a short wave at the junction between two plates, one of which is reinforced by ribs 215
A. V. OSIPOV: The diffraction of sound waves at the angular joint between thin elastic plates 223
Ye. V. GLUSHKOV and Yu. G. NIKITIN: Propagation of energy in a system of joined elastic half-strips of different thickness 239

V. G. POPOV: Interaction of a plane harmonic Rayleigh wave with a thin rigid edge inclusion coupled with an elastic medium 245
S. V. SHMEGERA: A method of solving plane initial and boundary-value problems of the dynamic theory of elasticity 253
V. N. PILIPCHUK and G. A. STARUSHENKO: A version of non-smooth transformations for one-dimensional elastic systems with a periodic structure 265
A. M. FILIMONOV: Continuous and discrete models of bounded one-dimensional media in the theory of viscoelasticity 275
V. D. POTAPOV: Analysis of the stability of stochastic viscoelastic systems 287
V. M. ALEKSANDROV and D. A. POZHARSKII: An axially symmetric contact problem for a truncated sphere in the theory of elasticity 295
Yu. V. NEMIROVSKII and A. P. YANKOVSKII: Some properties of the solutions of plane thermo-elastic problems of the rational reinforcement of composite structures 301
L. S. NOVOZHILOVA and S. V. URAZHDIN: Analytic calculation of the energy characteristics of slip line fields in plane plastic deformation problems 311
P. CAPODANNO: Calculation of the second variation in the problem of the stability of the steady motion of a rigid body containing a liquid 319
N. G. MAZUR, V. N. NIKOLAYEVSKII and G. A. EL': Energy exchange between seismic and ultrasonic vibrations in an elastic medium with a microstructure 325
I. V. ANDRIANOV and V. I. PISKUNOV: An asymptotic investigation of the dynamics of eccentrically reinforced plates 329
I. P. ZHELEZKO and N. I. OBODAN: Secondary branching and the post-critical behaviour of thin-walled shells during non-uniform deformation 333
N. A. IVAN'SHIN and Ye. A. SHIROKOVA: The solution of the second fundamental problem of the theory of elasticity for a plate with a doubly symmetric two-cusp cut 339
Contents of next issue I

VOLUME 61 1997 NUMBER 3

A. P. IVANOV: The problem of constrained impact 341
A. P. MARKEYEV: The critical case of fourth-order resonance in a Hamiltonian system with one degree of freedom 355
V. I. OREKHOV: Dual parametrization of the bifurcation set of a mechanical system with quadratic integrals 363
R. M. BULATOVIČ: The stability of linear potential gyroscopic systems when the potential energy has a maximum 371
V. V. KOZLOV: Stabilization of the unstable equilibria of charges by intense magnetic fields 377
I. V. BOIKOV: The stability of motion of a system with aftereffect 385
K. A. ZEMSKOV and A. G. PASHKOV✠: Construction of optimal position strategies in a differential pursuit–evasion game with one pursuer and two evaders 391
V. N. USHAKOV and A. P. KHRIPUNOV: Approximate construction of solutions in game-theoretic control problems 401
N. V. MEL'NIKOVA and A. M. TARAS'YEV: Gradients of local linear hulls in finite-difference operators for the Hamilton–Jacobi equations 409
P. A. MAZUROV: The construction of variational principles 419
A. I. KOROTKII: Reconstruction of the set of controls by measurements of the states of an evolution system 427
I. V. BURKOV and L. B. FREIDOVICH: Stabilization of the position of a Lagrangian system with elastic elements and bounded control, with and without measurement of velocities 433
E. K. LAVROVSKII and A. M. FORMAL'SKII: Stabilization of the position of a circular membrane 443
L. D. AKULENKO and S. V. NESTEROV: An effective method of investigating the oscillations of substantially inhomogeneous distributed systems 451
E. L. AERO and S. A. VAKULENKO: The kinetics of non-linear orientational deformations in nematic liquid crystals in a uniform magnetic field 463
P. V. KEREKESHA: The strictly mixed problem of the bending of a thin elastic plate in the shape of a segment of a circle 475
D. D. ZAKHAROV: Green's tensor and the boundary integral equations for thin elastic multilayer asymmetric anisotropic plates 483
G. Ya. POPOV: Problems of the concentration of elastic stresses near a conical defect 493
V. N. KUKUDZHANOV and D. N. SHNEIDERMAN: Solution of elastoplastic problems of the non-axially symmetric deformation of bodies of revolution 503

D. V. BALANDIN: Estimates of the maximum displacement of a solid in a hybrid system with dry friction 513
A. Z. FAZYLOV: Sufficient conditions of optimality for a survival problem 519
A. I. VESNITSKII and I. V. MILOSERDOVA: The optimal damper of the longitudinal oscillations of a rod..... 523
V. A. BUCHIN and I. V. PANFEROV: The generalized-plane problem of the theory of elasticity on the rotation of a right prism with a square cross-section..... 527
Contents of next issue I

VOLUME 61 1997 NUMBER 4

L. D. AKULENKO and S. V. NESTEROV: Determination of the frequencies and forms of oscillations of non-uniform distributed systems with boundary conditions of the third kind 531
O. V. KHOLOSTOVA: The non-linear oscillations of a satellite with third-order resonance..... 539
G. V. GORR: A linear invariant relation in the problem of the motion of a gyrostat in a magnetic field 549
N. V. MEL'NIKOVA and A. M. TARAS'YEV: Synthesis of optimal guaranteed control in finite-difference approximation schemes 553
I. S. RAPPOPORT and A. A. CHIKRII: Guaranteed result in a differential game of group pursuit with terminal payoff function 567
V. F. PIVEN': The theory of two-dimensional processes in inhomogeneous layers with a power law of their conductivity variation 577
A. T. IL'ICHEV: Solitary and generalized solitary waves in dispersive media 587
A. M. TER-KRIKOROV: Fundamental solution of the internal-wave equation for a medium with a discontinuous Brunt–Väisälä frequency 601
V. D. LUK'YANOV: The radiation of acoustic waves by a piston radiator in a rigid screen partially covering a waveguide cross-section 609
A. O. VATUL'YAN and S. A. KORENSKII: The linearization method in geometrical inverse problems of the theory of elasticity..... 619
G. G. DENISOV and V. V. NOVIKOV: Membrane deformation by a moving load..... 627
N. F. MOROZOV and I. L. SUROVTSOVA: The dynamic loading of a plane elastic domain with contour corner points 633
P. Ye. TOVSTIK: Axially symmetric deformation of thin shells of revolution made of a non-linearly elastic material 639
R. V. GOL'DSHTEIN and S. V. KUZNETSOV: The energy of singular effects in an elastic anisotropic medium..... 653
E. I. RYZHAK: Bounds for the free vibration frequencies of homogeneous anisotropic bodies with constrained boundary 659
Yu. I. NYASHIN and S. A. CHERNOPAZOV: A variational method for solving the contact problem in the theory of elasticity with friction 671
N. V. DERENDYAYEV and I. N. SOLDATOV: The motion of a point mass along a vibrating string 681
L. Z. FISHMAN: Criteria for unsafe and safe boundaries of the stability domain for equations with delay 685
O. A. ALEKHNOVICH and V. G. DEMIN✠: The stability of the pseudo-regular precession of a gyrostat 693
Contents of next issue I

VOLUME 61 1997 NUMBER 5

Announcement to authors and readers of the *Journal of Applied Mathematics and Mechanics* 697
F. L. CHERNOUS'KO and A. M. SHMATKOV: Time-optimal control in a third-order system..... 699
E. G. AL'BREKHT and S. B. MIRONOVA: Optimal stabilization in the critical case of a single zero root 709
A. F. KLEIMENOV: Solutions in a non-antagonistic positional differential game 717
N. N. PETROV: Multiple capture in Pontryagin's example with phase constraints 725
M. V. POMAZANOV: Computation of an optimal manifold to assist in the choice of a target and its attainment with the least expenditure 733
Yu. G. ISPOLOV: The vibrations of an extensible flexible thread with a small sag 743
V. N. KOSHLYAKOV: Structural transformations of dynamical systems with gyroscopic forces 751

G. V. GORR and N. G. SUVOROVA: A class of polynomial solutions in the problem of the motion of a gyrostat in a magnetic field 757
I. S. ZHUKOVA and A. I. SAICHEV: Euler statistics of the density field of passive tracers in incompressible and compressible media 765
A. N. BOGDANOV: Higher approximations of the transonic expansion in problems of unsteady transonic flow 775
A. F. SIDOROV: Two-dimensional processes of the unbounded unshocked compression of a gas 787
A. N. KRAIKO and D. Ye. PUDOVIKOV: The role of a length constraint in the design of minimum-drag bodies 797
V. M. ALEKSANDROV: The solution of integral equations which arise in periodic problems with mixed boundary conditions 811
A. G. KOLPAKOV and I. G. SHEREMET: An asymptotic model of a membrane and a string 817
V. N. PAIMUSHIN and I. N. SIDOROV: The construction of an integral representation of the solution of the equilibrium equations of Timoshenko-type theory for shells of complex geometry 825
N. K. AKHMEDOV: Analysis of the boundary layer in the axisymmetric problem of the theory of elasticity for a radially multilayered cylinder and the propagation of axisymmetric waves 833
V. P. LEVITSKII✠ and V. P. NOVOSAD: The unsteady axisymmetric contact problem with heat generation 843
A. M. KHLUDNEV: The contact between two plates, one of which contains a crack 851
Contents of next issue I

VOLUME 61 1997 NUMBER 6

S. S. GRIGORYAN: On the ninetieth birthday of Leonid Ivanovich Sedov 863
G. A. TIRSKII: Continuum models in problems of the hypersonic flow of a rarefied gas around blunt bodies 875
A. N. KRAIKO and D. Ye. PUDOVIKOV: The design of symmetric, optimal supersonic and hypersonic flow profiles for arbitrary isoperimetric conditions 901
A. I. RYLOV: New properties of the Busemann ellipse 917
I. Sh. AKHATOV, N. K. VAKHITOVA, G. Ya. GALEYEVA, R. I. NIGMATULIN and D. B. KHISMATULLIN: Weak oscillations of a gas bubble in a spherical volume of compressible liquid.... 921
A. V. MARCHENKO: Resonance interactions of waves in an ice channel 931
P. A. KRUTITSKII and G. Yu. MALYSHEVA: Transient planetary waves in semi-bounded channels extending along a meridan 941
O. V. MOTYGIN: Examples of non-uniqueness for the linear problem of potential flow around semi-submerged bodies 949
I. V. STUROVA: Radiation instability of a circular cylinder in a uniform flow of a two-layer fluid..... 957
A. Yu. BELIAEV: The critical pressure for flow in a porous medium 967
N. A. OSTAPENKO and G. Ye. YAKUNINA: The dynamics of slender bodies in dense media under conditions of the local interaction model 973
O. Yu. DINARIYEV and V. N. NIKOLAYEVSKII: Defining relations for a viscoelastic medium with microrotations 987
O. D. PRYAKHINA, O. M. TUKODOVA and M. R. FREIGEIT: The solution of unsteady coupled electromechanical problems for multilayered media 995
D. V. GRILITSKII and V. I. PAUK: The plane contact problem of steady thermoelasticity taking heat generation into account 1007
I. S. MAKAROVA and L. A. SARAYEV: The theory of non-linear hardening of an elastoplastic composite material filled with ideally elastic inclusions 1013
S. P. BAKANOV: The dynamics of condensation nuclei in a thermal diffusion chamber 1021
Yu. N. GORDEYEV and V. M. ENTOV: The pressure distribution around a growing crack 1025
Obituary: Andrei Izmailovich Subbotin (1945–1997) 1031
Contents of next issue I
Volume Contents/Author Index for Volume 61 III